

SOME PERPLEXING PROBLEMS ASSOCIATED  
WITH THE USE OF FRIES'S SYSTEMA MYCOLOGICUM  
AS A SANCTIONING BOOK

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SUMMARY. — Analysis with many examples of the nomenclatural techniques at specific and infraspecific ranks in E. FRIES's *Systema Mycologicum*.

RÉSUMÉ. — Analyse à l'aide de nombreux exemples de la méthodologie nomenclaturale utilisée par E. FRIES dans son *Systema Mycologicum* au niveau tant spécifique qu'infras spécifique.

Since 1910, Elias Magnus FRIES's volume *Systema Mycologicum* and *Elenchus Fungorum* have held a special place both in mycological taxonomic literature and in the nomenclature of fungi. For years these books were considered the starting point for valid publication of names of «*Fungi Caeteri*», and the protected status of names used in them was preserved after 1950, when the date 1 January 1821 was legislated as the starting point. The most recent revisions in Art. 13 of the International Code of Botanical Nomenclature approved at the Sydney Congress in 1981, again preserve the protected («sanctioned») status of names used in these books by FRIES, while liberating for use those names not sanctioned or adopted by him. The result has been the virtual elimination of ■ tedious search in the post-1 January 1821 literature for the name and date of earliest validation of pre-starting point names.

Unfortunately, the problems of starting points, now termed «sanctioned names», have not been completely smoothed. The intent of this paper is to remind us of three idiosyncrasies of the system. To be sure, other topics will

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require concerted attention, perhaps most important the typification of fungi the names of which were coined in Europe many years ago. How can the names originated by BULLIARD, for instance, be used in any modern sense if they are not represented by type specimens, regardless of their sanction (or non-sanction) by FRIES? BULLIARD's illustrations, while classic and unsurpassed, are not sufficient to serve a modern taxonomic community which depends on microscopic anatomy for its character fields. Nonetheless, this omission cannot be systematically attacked here (or in any other single paper). Instead, I wish to discuss the following topics : 1) the nomenclatural techniques used by FRIES to sanction names; 2) FRIES's treatment of infraspecific ranks; 3) the pre-1821 literature search and its implications.

It must be emphasized that these difficulties cannot be limited to FRIES's volumes, nor attributable to the Sydney changes in the Code. All should have been treated previously or should have been considered before the Sydney Congress.

I am persuaded that the most efficacious way to present my points is by citing «cases» by specific reference to names and pages in *Systema*. The first two topics are presented this way.

### NOMENCLATRURAL TECHNIQUES IN SANCTIONING NAMES

Art. 13 (Sydney Code) simplistically deals with the idea that FRIES sanctioned names, and that these names are protected (see below for more on this). Like its predecessors, the new Art. 13 does not grapple with the numerous ways in which FRIES adopted prior names. These variations, of course, parallel similar procedure of contemporaries of FRIES in other plant groups, but in phanerogams the Linnaean starting point dismisses these idiosyncrasies largely introduced by post-Linnaean authors.

With no intention of setting nomenclatural policy, I can offer the following categories of sanction, with representative cases and opinions.

**I. Simple sanction.** — FRIES adopts a prior name, with proper author attribution.

CASE. In *Systema* I : 269, FRIES adopts the name *Agaricus cupularis*, with proper author attribution to BULLIARD, pl. 554, fig. 2. Although the accurate citation is BULLIARD & VENTENAT, p. 529, the name is clearly sanctioned.

The situation is simple and obvious, and is repeated so many times that additional cases seem unnecessary.

**II. Sanction at infraspecific rank only.** — FRIES adopts a name originated at species rank to represent a taxon at some infraspecific rank.

CASE. *Agaricus camphoratus* Bull., *Hist.* p. 493, pl. 224, 567, fig. 1.

Sanctioned by FRIES as *Agaricus subdulcis* f. *camphoratus* (*Systema* 1 : 70). Author citation to this combination should be (Bull.) Fr. : Fr.

Additional cases :

*A. caulicinalis* Bull. as *A. stipitarius* f. *caulicinalis* (Bull.) Fr. : Fr. *Systema* 1 : 138.

*A. columbarius* Bull. as *A. serulatus* f. *columbarius* (Bull.) Fr. : Fr. *Systema* 1 : 204.

*A. digitaliformis* Bull. as *A. disseminatus* f. *digitaliformis* (Bull.) Fr. : Fr. *Systema* 1 : 305.

*A. extinctorius* Bull. as *A. micaceus* f. *extinctorius* (Bull.) Fr. : Fr. *Systema* 1 : 310.

**III. Reference to non-sanctioning material.** — FRIES adopts a prior name by reference to a non-sanctioning source. This seems to appear exclusively in *Systema* 3. index, compiled in 1832 after the appearance of all but the last portion of volume 3.

CASE. *Sphaeria aulacostoma* Kunze.

In *Systema* 3 : index 160, FRIES adopts this name, but refers to «Linn. V : 545». While sanction is dubious at best, at least there is a clear reference to a circumscription, and I would judge that the name is sanctioned.

CASE. *Peziza urnula* Weinmann.

In *Systema* 3 : index 139, FRIES adopts this name and author but with no literature citation whatsoever. Presumably FRIES had access to WEINMANN's 1832 article in *Flora*. In the absence of both a circumscription and a clear literature reference, I would treat this name as not sanctioned.

**IV. Sanction «in observationes».** — In the text discussing ■ taxon, FRIES implies sanction of a prior name.

CASE. In *Systema* 1 : 50, FRIES states that BULLIARD's name *Agaricus emerscens* represents a taxon close to, but distinct from *A. decastes*, but this is written in the discussion under the latter name. I judge that BULLIARD's name has not been sanctioned by FRIES, and should not be cited as «Bull. : Fr.».

Additional cases :

1. *aimatochelis* Bull. versus *A. armillatus*, *Systema* 1 : 214.

2. *dycmogalus* Bull. under *species inquirendae*, *Systema* 1 : 77.

**V. Sanction of an orthographic variant.** — FRIES adopts a prior name, but changes its spelling.

CASE. *Agaricus aimatospermus* Bull. apud Vent.

In *Systema* 3 : index 7, FRIES lists this name as synonymous with *A. haematospermus*, and in *Systema* 1 : 282, lists BULLIARD as author of the latter name. This is an obvious orthographic variant of BULLIARD's epithet.

I judge that BULLIARD's name has been sanctioned, but that FRIES's spelling must be used, although the ICBN does not specify orthographic variant protection. Citation should be to *A. haematospermus* Bull. apud Vent. : Fr. ≡ «*aimatospermus*» Bull. apud Vent.).

**VI. Sanction of ■ portion of a taxonomic concept.** — FRIES sanctions one

use of a prior name, while not sanctioning other (another) uses.

CASE. *Agaricus aquosus* Ventenat (as Bulliard).

In *Systema* 1 : 125, FRIES sanctions this name, citing BULLIARD, pl. 17 (only).

In *Systema* 1 : 125 (*sic*), FRIES lists this name and author as a synonym of *A. dryophilus*, citing BULLIARD, pl. 434 (only).

Both plates illustrate the same name under a single circumscription by VEN-  
TENAT (as BULLIARD).

I know no provision by which to judge whether the name is sanctioned or not. Typification of BULLIARD's name will make possible a taxonomic decision on synonymy and use of the name.

**VII. Simultaneous sanction and non-sanction.** — FRIES «simultaneously» sanctions ■ prior name, and does not adopt the name.

CASE. *Agaricus conocephalus* Bulliard.

In *Systema* 1 : 304, FRIES adopts BULLIARD's name. In the same volume (*Systema* 1 : 504), FRIES withdraws from his first concept, and specifically rejects BULLIARD's name as representing FRIES's concept.

I know of no provision for this situation, but I judge that citation of the epithet as «*conocephalus* Bull. : Fr.» would warn the reader that FRIES had positively dealt with the name.

**VIII. Sanction and simultaneous transfer.** — FRIES adopts a prior name, but in a «new» position.

CASE. *Agaricus abietinus* Bulliard & Ventenat (as Bulliard).

In *Systema* 1 : 334, FRIES adopts this epithet, but transfers it as *Daedalea abietina*. Citation should be *D. abietina* (Bull. : Fr.) Fr.

## TREATMENT OF INFRASPECIFIC RANKS

In the earliest codification of nomenclatural principles, including DE CANDOLLE's *Lois* (1867) and the Vienna Rules (1905), there appeared (Art. 13 and 14, Rec. 1, respectively) ■ summation of the glyphs used by 18th and 19th century botanical taxonomists to denote infraspecific (as well as infrageneric, etc.) ranks in manuscripts and publications. While there was no way to list all the permutations of letters and symbols, one rank seemed clear to DE CANDOLLE : varieties were symbolized by Greek letters. Subspecies, he wrote, could be represented by letters, numbers or typographical symbols, as could infravarietal ranks.

At some point between the Vienna Rules and the Cambridge Codes (1930), probably influenced by the erstwhile American Code language, the more particular wording of DE CANDOLLE was lost, and ■ simpler listing of nomenclatural rank titles was substituted. The latter remains as Art. 4 of the present Code.

Nonetheless, at this time there is no instruction in the Code to deal with the likes of FRIES's variety of treatment of infraspecific ranks. While I draw attention to FRIES, for non-sanctioned names everything written below applies to all other old literature including names of fungi, and so may present more complications under the revisions to Art. 13 approved at Sydney.

FRIES apparently used Roman and Greek letters, but not numbers or glyphs. At this point, consistency disappears. In most cases, the first letter (a or  $\alpha$ ) does not appear (but see below) leading the reader to conclude that the species itself represented the «a» or « $\alpha$ » infraspecific rank as well as the species epithet (we could call this the type subspecies, type variety, etc.).

In the cases presented below, the reader must judge which names are sanctioned, at which rank. I would conclude that an infraspecific epithet is sanctioned when it : a) appears in bold-italics, and b) conforms to the rules governing construction of an epithet. When a new binomial is sanctioned at infraspecific rank (see IA2, IB4, IB5, IIB4, IIC, IID, below), I would recommend that its epithet be treated as though introduced alone, as a sanctioned infraspecific rank name.

## 1. Greek letters as sole infraspecific rank.

### A. $\alpha$ included in lettering.

#### 1) Epithet clearly indicated.

CASE. *Systema* 1 : 144-145. *Agaricus metatus*  $\alpha$  *laevigatus*, *inodorus* ...  
 $\beta$ . *plicosus*, *pileo lineato-striato* ...

#### 2) Distinct species binomials indicated.

CASE. *Systema* 1 : 220-221. *Agaricus anomalus*  $\alpha$  *proteus*.

$\beta$ . *A[garicus] incurvus*, *pileo* ...

$\gamma$ . *A[garicus] tabularis*, *firmior* ...

$\delta$ . *A[garicus] diabolicus*, *pileo* ...

$\epsilon$ . *A[garicus] caninus*, *robustus* ...

### B. $\alpha$ excluded from lettering.

#### 1) Epithet clearly stated.

CASE. *Systema* 1 : 166. *Agaricus pictus*  $\beta$  *concolor* ...

CASE. *Systema* 1 : 119. *Agaricus velutipes*  $\beta$  *sphinx*, *pallidior* ...

$\gamma$ . *atropes*, *solitarius* ...

$\delta$ . *fuscipes*, *gregarius* ...

#### 2) No clear epithet indicated.

CASE. *Systema* 1 : 15. *Agaricus ovoideus*  $\beta$  *leucomyc. pectin. alter* ...

CASE. *Systema* 1 : 205. *Agaricus majalis*, *pileo* ...

$\beta$ . *solitarius*, *pileo virgato* ...

#### 3) Epithetic and non-epithetic names mixed.

CASE. *Systema* 1 : 60. *Agaricus adustus*  $\beta$  *lamellis tenuioribus* ...

- γ. *crassus*, lamellis valde distant ...  
 δ. *elephantinus*, pileo fusco-luteo ...  
 CASE. *Systema* 1 : 118-119. *Agaricus radicans* β *gracilior*, lam. sinuatis ...  
 γ. *humili*, firmus ...  
 δ. *pudens*, pileo laeviori ...  
 CASE. *Systema* 1 : 92. *Agaricus dealbatus*.  
 β. *aggeralis*, pileo subexcentrico ...  
 δ. *pileo repando lobatoque* ...  
 4) Distinct species binomials indicated.  
 CASE. *Systema* 1 : 157. *Agaricus umbratilis*.  
 β. *A[garicus] ambustus*, pileo convexo-plano ...  
 CASE. *Systema* 1 : 160. *Agaricus pterignus*.  
 β. *A[garicus] saccharinus*, pileo plicata ...  
 5) Epithetic names and species binomials mixed.  
 CASE. *Systema* 1 : 212-213. *Agaricus gentilis* .  
 β. *glandicolor*, umbrinus ...  
 γ. *A[garicus] punctatus*, pileo obsolete ...  
 δ. *A[garicus] incisus*, pileo squamuloso ...  
 ε. *helvelloides*, pileo obtuso ...  
 ζ. *A[garicus] spurius*, pileo stipite ...  
 CASE. *Systema* 1 : 182-183. *Agaricus ostreatus*.  
 β. *flavocinereus*, pileo cinereo-subrufescente ...  
 γ. *dryadeus*, pileo cinereo-lutescente ...  
 δ. *A[garicus] reticulatus*, lamellis ...

## II. Roman letters as sole infraspecific rank.

### A. «a» included in lettering.

#### 1) Epithet clearly stated.

- CASE. *Systema* 1 : 229. *Agaricus cinnamomeus*.  
 a. *semisanguineus*, firmior ...  
 b. *cinnamomeus*, firmior ...  
 c. *conformis*, pileo ...  
 d. *croceus*, medius ...  
 e. *pileo stipiteque luteis* ...  
 f. *paluclosus*, pileo ... [lapsus for paludosus?]

#### 2) Epithet not clearly stated.

- CASE. *Systema* 1 : 106-107. *Agaricus laccatus*.  
 a. *pileo rufo l. carneo* ...  
 b. *pileo amethystino* ...  
 CASE. *Systema* 1 : 159. *Agaricus corticola*.  
 a. *fuscescens*. Mich. ...  
 b. *albidus*. *A. umbellif.* ...

## B. «a» excluded from lettering.

## 1) Epithet clearly stated.

CASE. *Systema* 1 : 116. *Agaricus murinaceus*.b. *aglidius, pileo glabro* ...CASE. *Systema* 1 : 179. *Agaricus corticatus*.b. *tephrotrichus, minor, etc.* ...

## 2) Epithet not clearly stated.

CASE. *Systema* 1 : 146. *Agaricus polygrammus*.b. *amoene niveus* ...CASE. *Systema* 1 : 155. *Agaricus epipteryginus*.b. *totus cinereus*.CASE. *Systema* 1 : 176. *Agaricus lepideus*.b. *monstrositas, stipite longo* ...c. *totus ramosus, absque pileo* ...

## 3) No verbal name furnished.

CASE. *Systema* 1 : 124. *Agaricus collinus*.

b. Fl. Dan. t. 1609.

CASE. *Systema* 1 : 160-161. *Agaricus capillaris*.

b. Mich. t. 80. f. 11 ...

c. Mich. t. 80. f. 10 ...

## 4) Name by reference to prior binomial.

CASE. *Systema* 1 : 134. *Agaricus ocellatus*.b. *A[garicus] pallior* Batsch. cont. l. f. 95.CASE. *Systema* 1 : 138. *Agaricus foetidus*.b. *A[garicus] venosus* Per. Syn. p. 467.CASE. *Systema* 1 : 155. *Agaricus citrinellus*.b. *A[garicus] tenellus* Batsch. f. 88. Mart. Erl. p. 427.

## III. Both Roman and Greek letters employed.

## A. Epithet unclear in Roman letters, clear in Greek letters.

CASE. *Systema* 1 : 124. *Agaricus dryophilus*.b. *stipite basi tuberoso* ...β. *funicularis, major, caespitosus* ...CASE. *Systema* 1 : 132. *Agaricus conigenus*.a. *pileo fuligineo-livido* ...b. *pallens* ...β. *porcinus, pileo umbonato* ...CASE. *Systema* 1 : 165. *Agaricus ericetorum*.b. *grisellus*. A. S. p. 225. . .c. *laete viridis*. Fl. Dan. t. 1672. f. l.β. *pileo subsericeo*. Buxb. C. II. t. 50. f. 4.

- γ. *velutinus*, pileo griseo ...
- δ. *myocbrous*, obscure fuscus ...

B. No epithet in Roman or Greek letters.

CASE. *Systema* 1 : 143. *Agaricus galericulatus*.

- b. *amoene albus* ...
- β. *solitarius*, major ...

C. No epithet in Roman letters, species binomial in Greek letters.

CASE. *Systema* 1 : 153. *Agaricus stylobates*.

- a. *candidus*, A.S. p. 196 ...
- b. *grisellus*, Pers. Syn. p. 390 ...
- c. *coerulescens*, orbe fusca ...
- β. *A[garicus] dilatatus*, pileo uncialis ...

D. Epithets, species binomials and non-epithetic names mixed.

CASE. *Systema* 1 : 234. *Agaricus armeniacus*.

- b. *pileo badio*, ferrugineo, etc. ...
- β. *falsarius*, pileo subobtusio ...
- γ. *A[garicus] dilutus*, rigidus ...

IV. Roman, Greek, Roman letters in nomenclatural hierarchy.

CASE. *Systema* 1 : 99. *Agaricus pratensis*.

- a. *totus fulvus* ...
- b. *pileo rufescente* ...
- [no c.]
- d. *totus cinereus* ...
- e. *totus albus* ...
- β. *ericosus*, pileo tenuiori ...
- a. *flavescens*, etc. ...
- b. *coerulescens* ...
- c. *cinereus* ...
- d. --- albus ----- ? *A. ericetosus* ...

V. Roman letter before initial species binomial.

CASE. *Systema* 1 : 191.

- 1.a. *A[garicus] reniforme*, pileo ...
- 1.b. *A[garicus] acerosus*, pileo ...

CASE. *Systema* 1 : 174-175.

- 1.a. *A[garicus] tuber regium*, pileo ...
- 1.b. *A[garicus] sajor caju*, pileo ...

CASE. *Systema* 1 : 138.

- 21.a. *A[garicus] stipitarius*, pileo ...
- 21.a. *A[garicus] faetidus*, pileo ...



## PRE-1821 LITERATURE SEARCHING

The use of old taxonomic literature is nothing new, and the readers of this volume surely need no instructions in bibliothetic techniques. Concomitantly, however, I perceive that mycological taxonomists are about to be confronted with a literature less familiar than they are used to.

Because of sanctioning books and various compendia (SACCARDO, PETRAK, *Index of Fungi*, *Index Nominum Genericorum*, lists of *nomina conservanda*, etc.) we have been lulled into rather easy literature searches, in which the sources of names have been narrow. Everyone is familiar with BULLIARD, SCOPOLI, PERSOON, LINK, HOLMSKJOLD, LINNAEUS, *Flora Danica*, LAMARCK, SOWERBY and DE CANDOLLE as sources of fungus names. Not quite as visible have been WITHERING, WIGGERS, SIBTHORP, HUDSON, LIGHTFOOT, BATSCH, JACQUIN, WILLDENOW, WULFEN, CURTIS, BOLTON and TODE. The number of libraries holding the first category of works is rather limited, despite increasing availability of microfiche editions. My university library holds only LINNAEUS and PERSOON's *Synopsis*. Libraries holding the second category are very few, surely less than a half dozen in North America.

What disturbs me is that there are still at least two categories to be listed.

In my preparation for this paper, I selected one rather well-known publication, HOLMSKJOLD's *Beatae raris fungis Danicis*, two volumes published in 1790 and 1799, and attempted to ascertain all the sources of names adopted by HOLMSKJOLD. Aside from publications not employing binomial nomenclature (non-Linnaean), of which HOLMSKJOLD made liberal use, HOLMSKJOLD seems to have about 20 sources for names, including several of those mentioned above. In addition, however, HOLMSKJOLD drew on GUNNER, AFZELIUS, RETZ, MULLER, KRAPP and LILJEBLAD. These authors represent an even more obscure literature than those above.

Next I selected a few of HOLMSKJOLD's sources and traced their sources of names. GUNNER's *Flora Norvegia*, for example, drew upon Linnaeus's several compendia and floras and early *Flora Danica* fascicles, but also furnished such cryptic references as «Ström. Föndm.», «it. W-goth.», and «Boehm. Lips.», only the latter to be found in the library of the New York Botanical Garden. Other HOLMSKJOLD sources cite such references as «A[cta] Holm. 1769», «M. Pl.» «Weig[el]. F[lor]a», «Loesel. Pruss.» «Pauli. Oec.» and «Dalib. Paris.», none of which can be traced or found in the NY library. These publications would seem to represent the ultimate depths of obscurity. If not available at NY, what can be expected in South America, Africa, Asia and the tropical nation libraries. Yet, for the fastidious taxonomist, they will provide numerous names not sanctioned, untypified and unknown.

Moreover, this literature pool treats names in a myriad of ways – with or without author attribution, with mixed binomials and polynomials, etc. – and we must begin a process of disqualifying numbers of specific publications on these bases. SECRETAN, already disqualified, is a model of consistency

when compared to 18th century literature.

Finally, I would make a plea that a **systematic** search be begun, in order to develop an eventual list of fungus names originated between 1753 and 1821, their sources, type localities and their fates under the sanctioning system. The task would be laborious and tedious, but ultimately would provide a reference of names to be consulted before publishing more new names, and for synonyms (taxonomic and nomenclatural) and homonyms.

Again, this paper cannot solve these three problems which come with the sanctioning system. Its intent is to make the reader aware that they exist and will not go away without thought, planning and work.